GOVERNMENT OF INDIA
AGRICULTURE
LOK SABHA

UNSTARRED QUESTION NO:2902
ANSWERED ON:10.03.2003
PROJECTS RUN BY IASRI
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Will the Minister of AGRICULTURE be pleased to state:

(a) whether development of statistical methodology for conducting agricultural experiments/investigations is part of work-mandate of Indian Agricultural Statistic Research Institute; and

(b) if so, the number and details of such projects conducted during last three years?

Answer

THE MINISTER OF STATE IN THE MINISTRY OF AGRICULTURE (SHRI HUKUMDEO NARAYAN YADAV)

(a) Yes, Sir.

(b) There are total 44 projects taken during last 3 years as per details in Annexure I.

ANNEXURE-I

During the last three years the Institute has initiated the following research projects:

1. A statistical investigation on the long term effects of fertilizers on productivity of cereal crop sequences

- To estimate the overall fertilizer treatment effects for each crop sequences
- To study the effects of long-term fertilizer use on the yield of different crops
- To develop methodology for determining optimal fertilization practice for each the crop sequences
- To develop yield prediction models for crops included in different sequences

2. A diagnostic study of Design and Analysis of Field Experiments

- To conduct a diagnostic survey of several experiments for identifying different experimental situations so as to provide appropriate methods of analysis of data for each possible situation as well as to develop methodology for data analysis are not available or suitable
- To evolve appropriate and modified methods of combined analysis of data from experiments conducted at different locations and/or years by using the concept of nested models
- To use the concept of multivariate analysis of variance to analyse the data of experiments with multiple responses
- To develop an appropriate but exact method of estimation of variance components from an unbalanced data obtained from block designs with possibly unequal block sizes and varying replications

3. Statistical Investigation on the fertilizer use efficiency in relation to cultural practices

- To carry out the combined analysis of cultural cum manurial experiments over years/locations for various crops
- To develop fertilizer response models based on cultural cum manurial trials
- To obtain output input ratios at a various levels of cultural practices of crops

4. Design and Analysis of on Station and on Farm Agricultural Research Experiments: A Revisit

- To develop suitable methodology by using data of uniformity trials and past experiments in deciding the shape and size of irregular plots and blocks for future experimentation.
- To develop efficient designs and appropriate methods of analysis of data by exploiting the principle of resolvability, fractional factorials and nested models for experiments on Farm Research.

5. Three-associate class partially balanced incomplete block designs and their applications to partial diallel crosses

- To obtain some methods of construction of three associate class partially balanced incomplete block designs and to prepare a catalogue of the available PBIB (3) designs along with those constructed
- To develop a computer module to catalogue, generate and analyse three associate class partially balanced incomplete block designs
- To identify the efficient plans for partial dialler crosses obtained through schemes and to develop computer modules for generation of these plans along with their analysis in completer and/or incomplete block settings

6. Statistical study on completion effects among neighbouring units in field experiments

- To study the characterization properties of the designs for investigating competition effects among neighbouring units.
- To obtain (construct) designs for estimating competition effects in one-way and two-way elimination of heterogeneity settings.
- To study the optimality aspects of the designs obtained for competition effects and to prepare a catalogue of the optimal (efficient) designs for these situations.
- To study the competition effects among neighbouring units using the data generated through simulation techniques.

7 Design and Analysis of Agroforestry Experiments

- To evolve and document general methodologies for the statistical analysis of data already generated through agroforestry experiments
- To obtain appropriate designs alongwith the layout plans and methodology for the analysis of the experiments under agroforestry system to be suggested to the collaborative centre(s)
- To study the relationship among the various components (trees and crops) in agroforestry.

8. Planning, Designing and Analysis of Experiments relating to Soil Test-Crop Response Correlations

- To improve the existing methodology for analysis of on-going STCR experiments
- To carry out planning and designing for the conduct of new set of experiments and subsequently to carry out the analysis of data
- To develop data base for STCR experiments

9. Planning, Designing and Analysis of Experiments planned on stations under the Project Directorate for Cropping System Research

- To identify the suitable statistical designs for conduct of experiments according to the technical programme formulated in the annual workshop of the project
- To develop suitable method of analysis for the identified designs
- To statistically analyse the data of experiments conducted at 37 cropping system research centre.

10. Planning, Designing and Analysis of `On Farm` Research Experiments planned under Project Directorate for Cropping System Research.

- To provide suitable sampling plan and design for layout of experiments on cultivator`s fields
- To identify the appropriate statistical methodology for the analysis of data collected under the programme of experiments on cultivator`s field and to undertake the analysis of the data of experiments conducted
- To finalise the results of experiments conducted on cultivator`s fields for inclusion in the Annual Report of the project

11. Planning, Designing and Statistical Analysis of data relating to Experiments conducted under AICRP on Long -Term Fertilizer Experiments

- To plan and design long-term experiments
- To try alternative approaches for analysis of data
- To coordinate the work relating to statistical aspects of the project and also to provide necessary information to the Project Coordinator (LTFE) and ICAR

12. Study of Land Use Statistics through integrated modelling using Geographic Information System

- To obtain land utilisation statistics with the help of survey and remote sensing technique
- To study the qualitative aspect of land utilisation statistics obtained through different sources i.e. Census, Survey and Remote Sensing
- To develop model for integration of statistics obtained through different sources

13.Development of GIS based technique for identification of potential agro-forestry area

- To identify the important factors responsible for growth of agroforestry
- To construct the suitability index using Spatial-Analytic Hierarchy Process
- To compare the above mentioned index with the Composite development index

14. Pilot study on forecasting of brood-lac yield from Buteamonosperma (Palas)

- To identify the factors affecting yield of broodlac
- To develop models for forecasting the yield of broodlac from palas tress

15. Forecasting Sugarcane Yields Using Multiple Markov Chains

- To develop models for forecasting sugarcane yields based on higher order Markov Chains
- To develop feasibility of use of data of more than one point of time through growth indices and Principal Component Analysis
- To investigate the usage of lumable Markov Chains in forecast models
- To investigate the behaviour of the proposed and also the existing models for forecasting sugarcane yields after increasing the size of the baseline data set.
- To forecast the sugarcane yields from the developed models and compare them with those obtained from the existing methods

16. Forecasting the loss in yield due to weeds

- To examine the growth behaviour of weeds which affect significantly the crop yield under study.
- To find out the relationship between crop yield and weed parameters and to develop methodology for forecasting loss in yield

17. Development of weather based forewarning system for crop pests and diseases-NATP Project

- To generate weather based forecasting models for insect pests and disease development
- To validate the forecasting models

18. Studies on bioecology and population dynamics of major pests of mango (hoppers, fruitfly webber & infloresence midge and guave (fruit-borer) (In collaboration with CISH,Lucknow)

- Identification of the underlying law the fruitfly follows in natural way of its own
- The establishment of the relationship of fruitfly population with various relevant lag weather variables/fruitfly population by fitting appropriate models.
- Development of final model by using individual functions fitted above.

19. Assessment of harvest and post-harvest-losses-a mission mode project

- To conduct a pilot study to assess the harvest and post harvest losses of oilseeds, milk, wool, meat, eggs and poultry meat, marine and inland fishery at different levels (Producer, consumer and market)

20. A pilot study on cost of production of Coconut in Kerala-Funded from Coconut Development Board, Kochi, Kerala (Collaborative with Central Plantation Crops Research Institute, Kasargod, Kerala)

- To build reliable and efficient estimates of cost of cultivation of coconut
- To study the agricultural practice in Coconut
- To utilise the information collected in the objective (to study the agricultural practice in Coconut) on input details to formulate more remunerative cultivation practice

21. Estimation of wool production-emerging data needs and a methodological reappraisal (Collaborative with Central Sheep & Wool Research Institute (ICAR), Avikanager (Rajasthan)

- To modify the existing sampling methodology for estimation of wool production
- To estimate the breed-wise sheep number, average wool yield and total wool production at district/state level with a reasonable precision.
- To study the socio-economic status of farmers engaged in sheep rearing

22. Jai-Vigyan National Science and Technology Mission on Household Food and Nutritional Security for Tribal, Backward and Hilly Areas

- To document socio-economic conditions and food security status of the targeted population,
- To assess cost of differential technological interventions in various target domains,
- To identify possible constraints for diversification and wider adoption of improved life support crop species and lied enterprises,
- To quantify the potential benefits of improved technologies and diversification on poverty allevation, food security, income and sustainability of resource base in the target domain,

- To assess implications of improved technology interventions on gender related issues, and
- To examine role of government intervention through on-going programs for wider adoption and larger impact of improved technologies in tribal, backward and hill areas.

23. Study of Lac Marketing in India

- To study existing marketing channel and price spread in lac marketing
- To examine extent of market integration in lac markets
- To suggest remedial measures for improving marketing environment of lac in India

24. An econometric study of technological dualism in egg production

- To study the extent of technological dualism and change in egg production
- To study effect of technological dualism and technological change on functional income distribution
- To examine allocate efficiency under different levels of technology

25. Study to formulating long term mechanization strategy for each agro-climatic zone/state Funded by Department of Agriculture and Cooperation, Ministry of Agriculture

- To study the soil types, land topography
- To study the socio-economic conditions (financial status) of the farmers and farm labourers and assess their capabilities for acquiring adopting the needed agricultural equipment/machinery
- To study the present status, ultimate potential, the gaps, highlighting critical ones; for equipment used in various agricultural operations starting right from village to post-harvest operating
- To study the types and utility of various agricultural equipment, both conventional and improved ones, presently in use and those needed in future, for different crops/cropping systems in the Zones.
- To study the impact of farm mechanization on employment of labour
- To study the cropping pattern, both agricultural and horticultural, in the Zones, yields in relation to the national average, and their growth potential
- To study and assess the use of arm power per hectare, ultimate requirement, ways and means to fulfil the gaps for various farm operations
- To study the infrastructural facilities for the manufacture, marketing, after sale service/repairs availability etc. of agricultural equipment
- To study and assess the adequacy and the requirement of infrastructure at the central and state levels, for planning, promotion, execution and extension of the various plan programmes on agricultural mechanisation
- To identify new/improved farm equipment that may be needed by the farmers during next 20 years i.e. by the year 2020, for carrying out different farm operations
- To formulate strategies and programmes that may be required for mechanisation of agriculture during the period 2001-2005, 2005-2010, 2010-2015, 2015-2020

26. Technical Efficiency Analysis of Rice Wheat System in Punjab

- To estimate the farm level technical efficiency of rice-wheat system in Punjab.

27. On some robust estimation heritability

- To examine the influence of non-normality and other assumptions on the estimation of heritability
- To study the effect of aberrant values on the estimates of heritability
- To identify and develop procedures for robust estimation of heritability

28. Empirical investigations on the influence of fixed effects on the estimates of heritability

- To study the effect of non-genetic factors on the estimation of heritability and its precision
- To compare the different methods of correction of data by applying the method of fitting constants
- To compare mixed model technique with the above methods for estimation of variance components and consequently heritability

29. Studies on data processing techniques for statistical analysis of large field variability in hilly and salt regions

- To consolidate in a comprehensive manner the data processing techniques for statistical quantification of the large field variability in hilly and salt affected soils
- To finalise the algorithms and develop softwares for computerised data processing of the natural variability present in the plantations carried out in uncultivable lands
- To develop computerised techniques for the construction of the fertility gradient maps of examined soil characteristics field variability obtained by using different concepts of statistical methodology
- To formulate computerised data processing technology for correlating the plant growth traits performance with that of soils characteristics

30. Study of Nonlinear time series modelling in agriculture

- To study relative merits and demerits of various tests of linearity
- To investigate properties of autoregressive conditional heterosedastic, self-exciting threshold autoregressive and bilinear model from the family of parametric nonlinear time series models
- To develop relevant computer programs for fitting of above models and to apply these to react data from the fields of entomology, fishery, agricultural economics etc.

31. Studies on growth pattern and heritability of fitness traits in Indian breeds of goats

- To compare different methods of estimation heritability of fitness traits.
- To compare the adequacy of different non-linear models utilized for studying growth pattern.

32. Development of statistical procedures for selecting genotypes simultaneously for yield and stability

- To construct new indices for selecting genotypes simultaneously for both yield and stability
- To make comparison among the indices developed, based on standard statistical techniques and on techniques involving simulation
- To develop a computer program for judging desirable genotypes

33. Development of Software for Online Information System on Personnel Management in ICAR

- To design and develop database required for manpower of ICAR set up
- To design and develop user interface for online data entry and updating
- To design and develop reports and queries for manpower information management

34. Development of web-site for National Seed Project (N.S.P)

- To identify the information to be kept on web.
- To design and develop the database
- To design and develop the web application.
- To configure network for web site and database server

35. Agricultural Field Experiments Information System

- Collection of data of Agricultural Field Experiments from
- different Research Stations/Argil. Universities/ICAR Institutes in the country.
- To develop various software for creation, validation and updation of database and for retrieval of information.
- To maintain the database and update it at regular intervals.

36. Institutionalization of Research Priority Setting, Monitoring and Evaluation and Networking of Social Scientists

- Development of monitoring mechanism
- Development of monitoring indicators at different operative levels
- Development of Project Information and Management System (PIMS) and linking it with Internet.
- Training and workshops on monitoring and PIMS Establishing network of agricultural statisticians and economists.

37. Integrated National Agricultural Resources Information System (INARIS)

- To integrate existing databases of crops, plant genetic resources, horticultural and plantations crops, spices, animal genetic resources, fish genetic resources, socio-economic resources, agro-forestry system, water resources, agricultural farm mechanization etc
- To develop and develop comprehensive data base on the above agricultural resources
- To develop resource maps based on various databases through GIS
- To develop warehouse of the above databases

38. Expert System of Extension

- To categorize agriculture in sub-areas and collect relevant information of these areas to feed into database (At IARI)
- To make decision rules to process the information (At IARI)
- To design & develop the web based expert system in extension (At IASRI)
- To provide required information to the farmers and extension workers to take decisions before starting the agricultural enterprise (At IARI)

39. National Information System on Agricultural Education on Internet (NISAGENET)

- Development of a computerised information system related to National Agricultural Education in India

with a data bank containing data collected from all the SAUs and Deemed Universities of ICAR.
- Specification for how best the data collected from primary and secondary sources be stored in the database.
- Development of suitable modules for updation, modification and expansion in the database structure
- Development of application programs for different Report and Queries to meet users requirements.

40. Short Term Training Programs in Information Technology

- To train manpower in the field of information Technology
- To expose the scientist of NARS to lates Developments in Information technology

41. Development of Statistical Package for Agricultural Research (Windows Version) -SPAR 2.0

- To design and develop the windows version of the SPAR1
- Development of few additional modules which are not available in the SPAR1.

42. Development of Expert System on Wheat Crop Management (EXOWHEM)

- To collect and compile the information from the experts for Wheat Crop Management
- To develop the knowledge base for the Expert System
- To develop inference engine for the expert system
- To develop and implement expert system on Wheat Crop Management

43. Statistical Evaluation of Agricultural Field Experiments conducted in Maharashtra State

- To prepare indices for evaluation of different types of agricultural field experiments.
- To suggest corrective measures for increasing the precision of the experimentation on the basis of indices.

44. Statistical Package for Animal Breeding Data 2 (SPAB 2)

- The immediate objective or Phase 1 of the project will be to develop Window based Version of SPABD using a Programming Language, which should make the software platform independent.